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METHOD AND APPARATUS FOR MATERIAL PROCESSING

Inventors: Paul E. Denney et al.

Filed.: March 18, 2004 Atty Docket: LOMASR.021CPI

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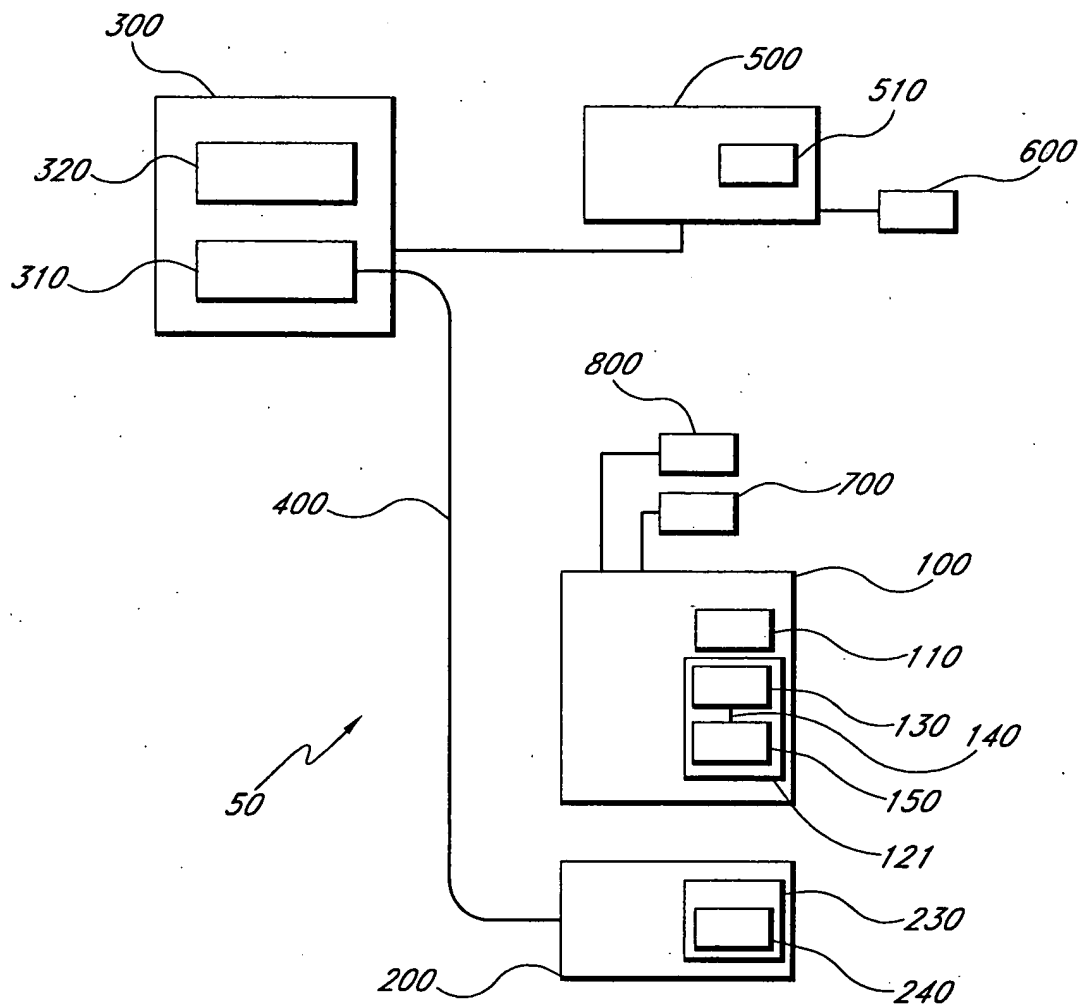


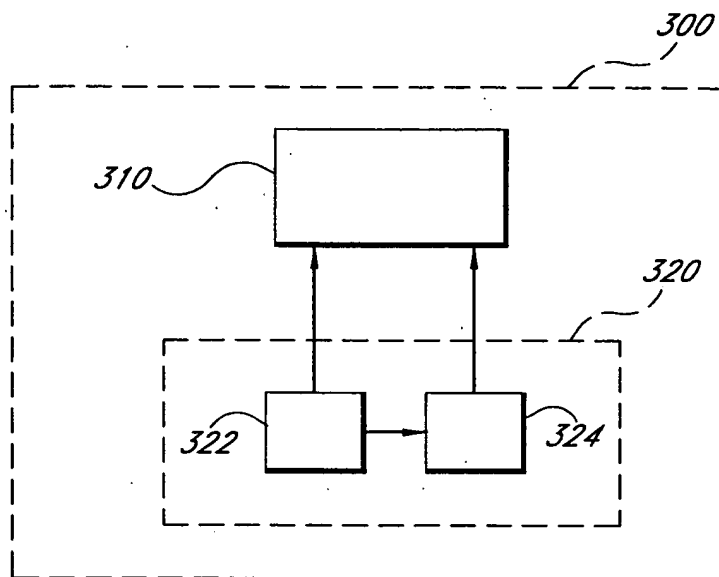
FIG. 1

*METHOD AND APPARATUS FOR MATERIAL PROCESSING*

*Inventors: Paul E. Denney et al.*

*Filed.: March 18, 2004    Atty Docket: LOMASR.021CPI*

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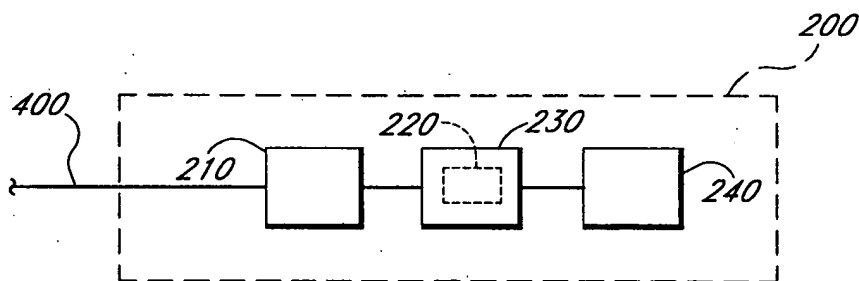
*FIG. 2*

*METHOD AND APPARATUS FOR MATERIAL PROCESSING*

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*Filed.: March 18, 2004    Atty Docket: LOMASR.021CPI*

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*FIG. 3A*

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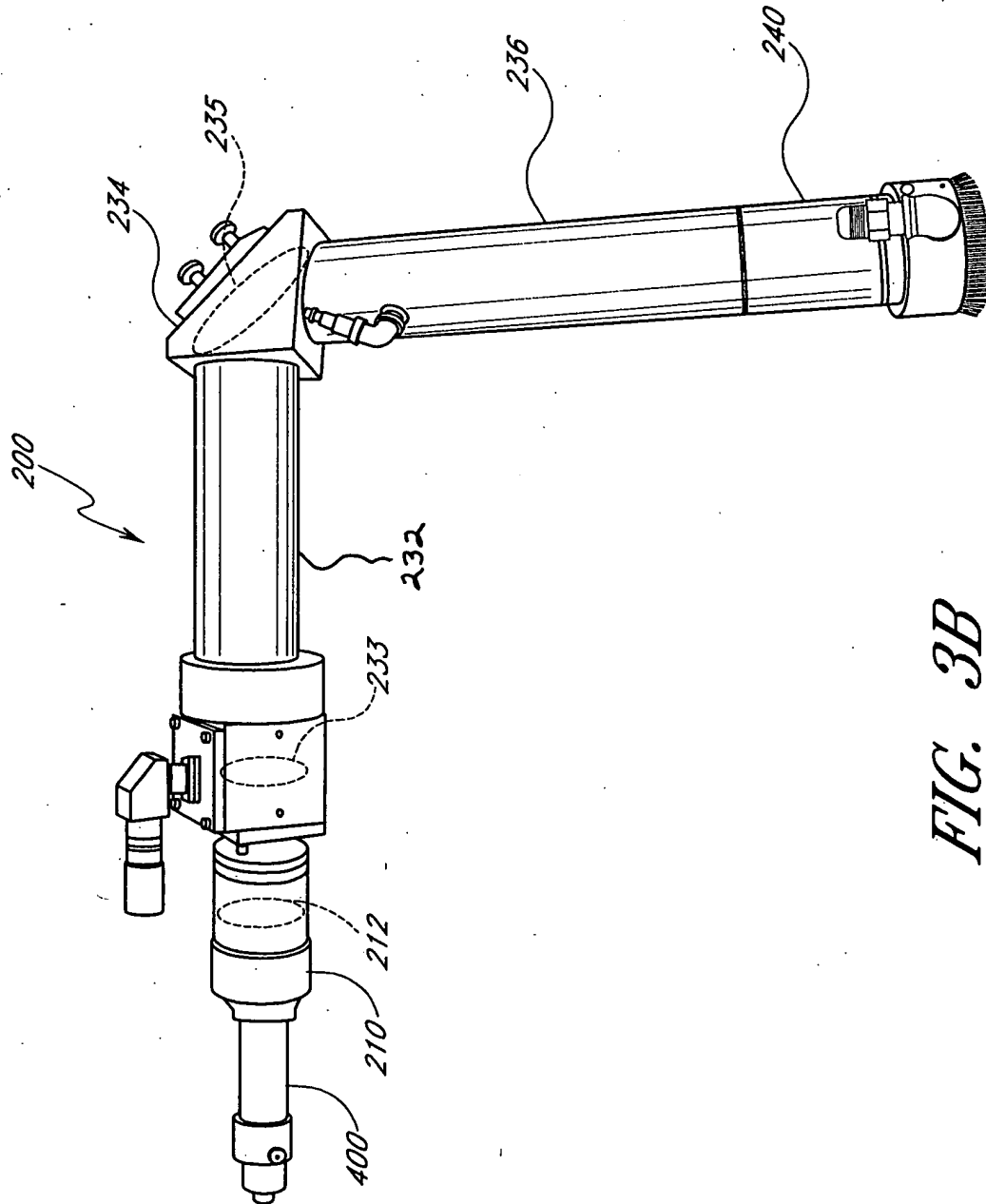


FIG. 3B

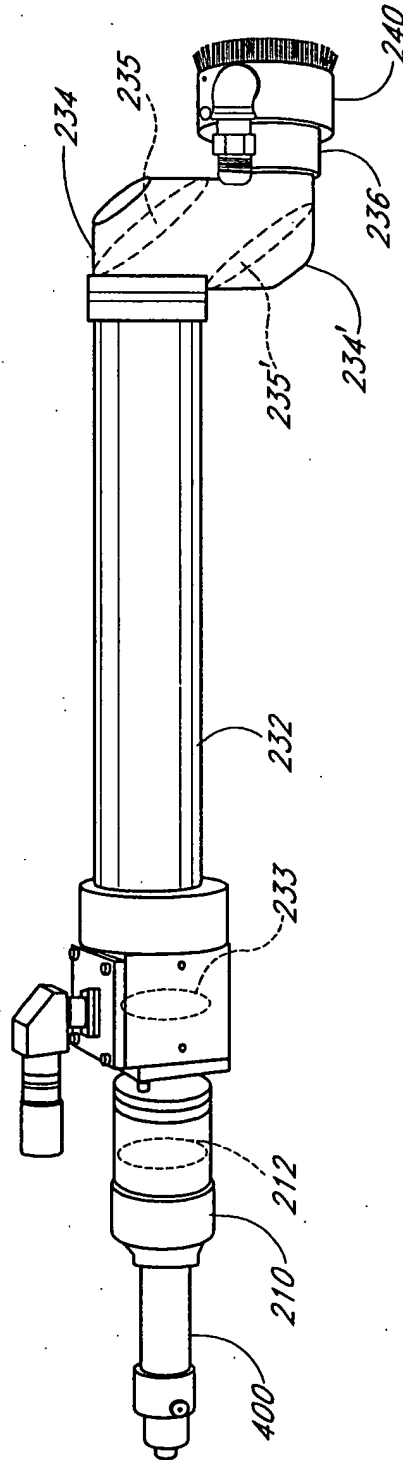


FIG. 3C

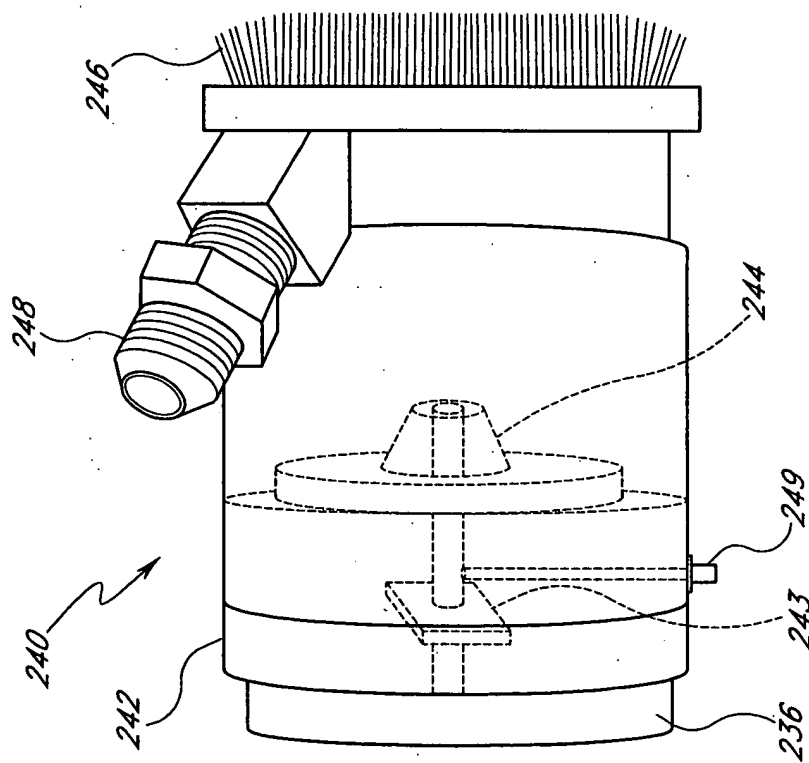


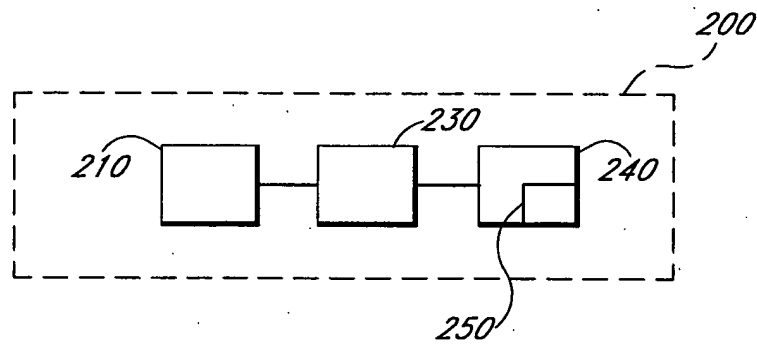
FIG. 4

*METHOD AND APPARATUS FOR MATERIAL PROCESSING*

*Inventors: Paul E. Denney et al.*

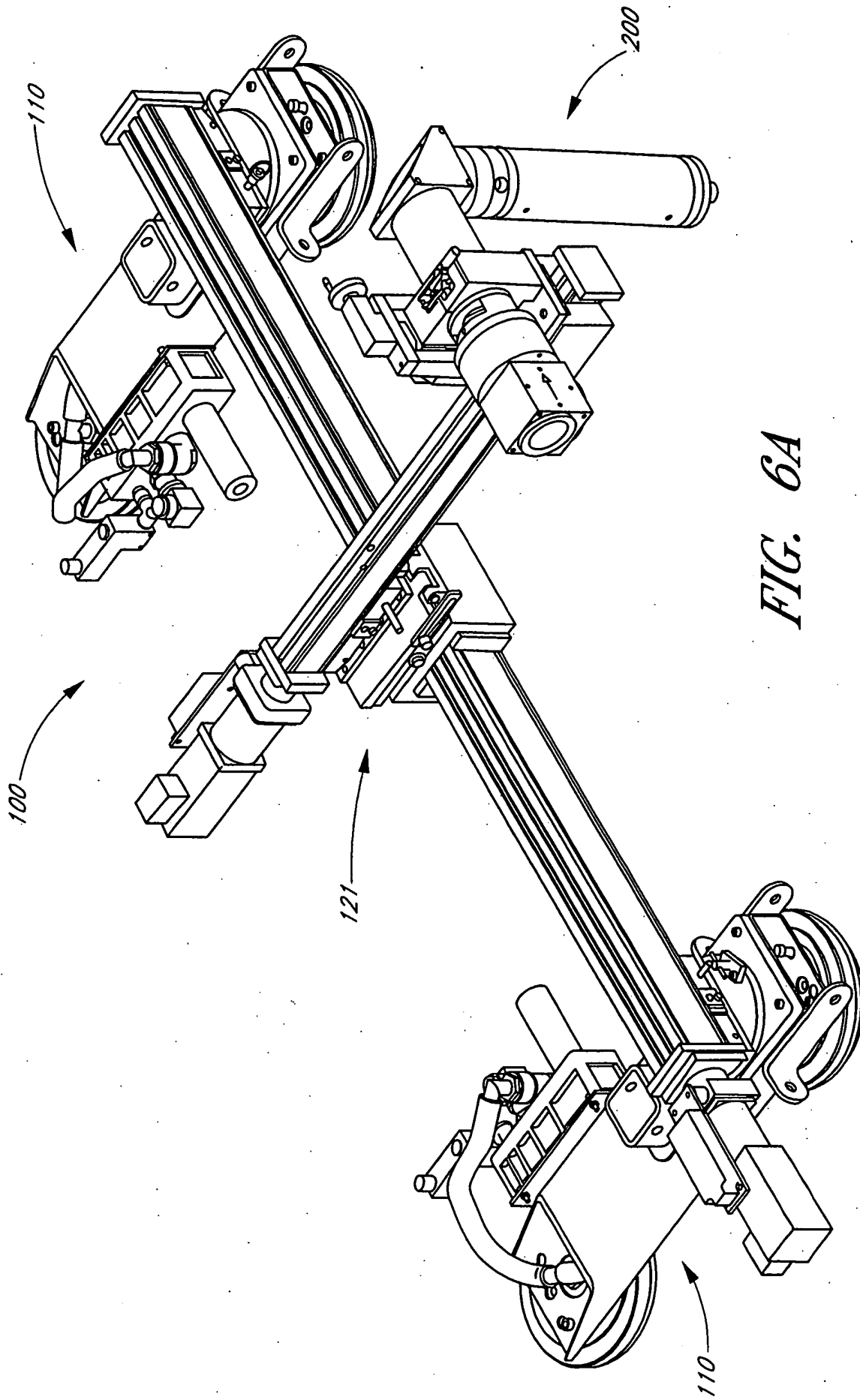
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*FIG. 5*





*FIG. 6A*



METHOD AND APPARATUS FOR MATERIAL PROCESSING

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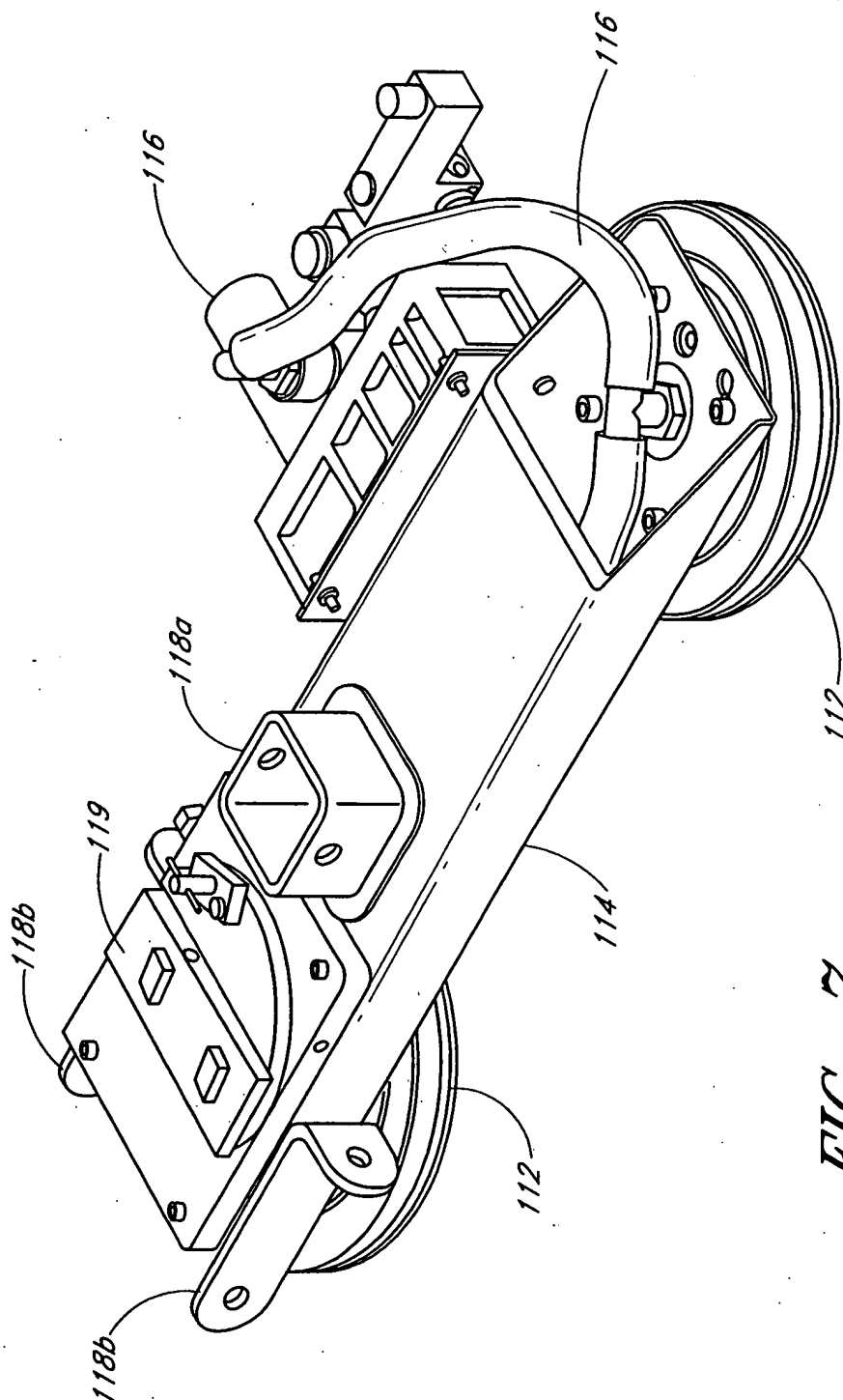


FIG. 7

METHOD AND APPARATUS FOR MATERIAL PROCESSING

Inventors: Paul E. Denney et al.

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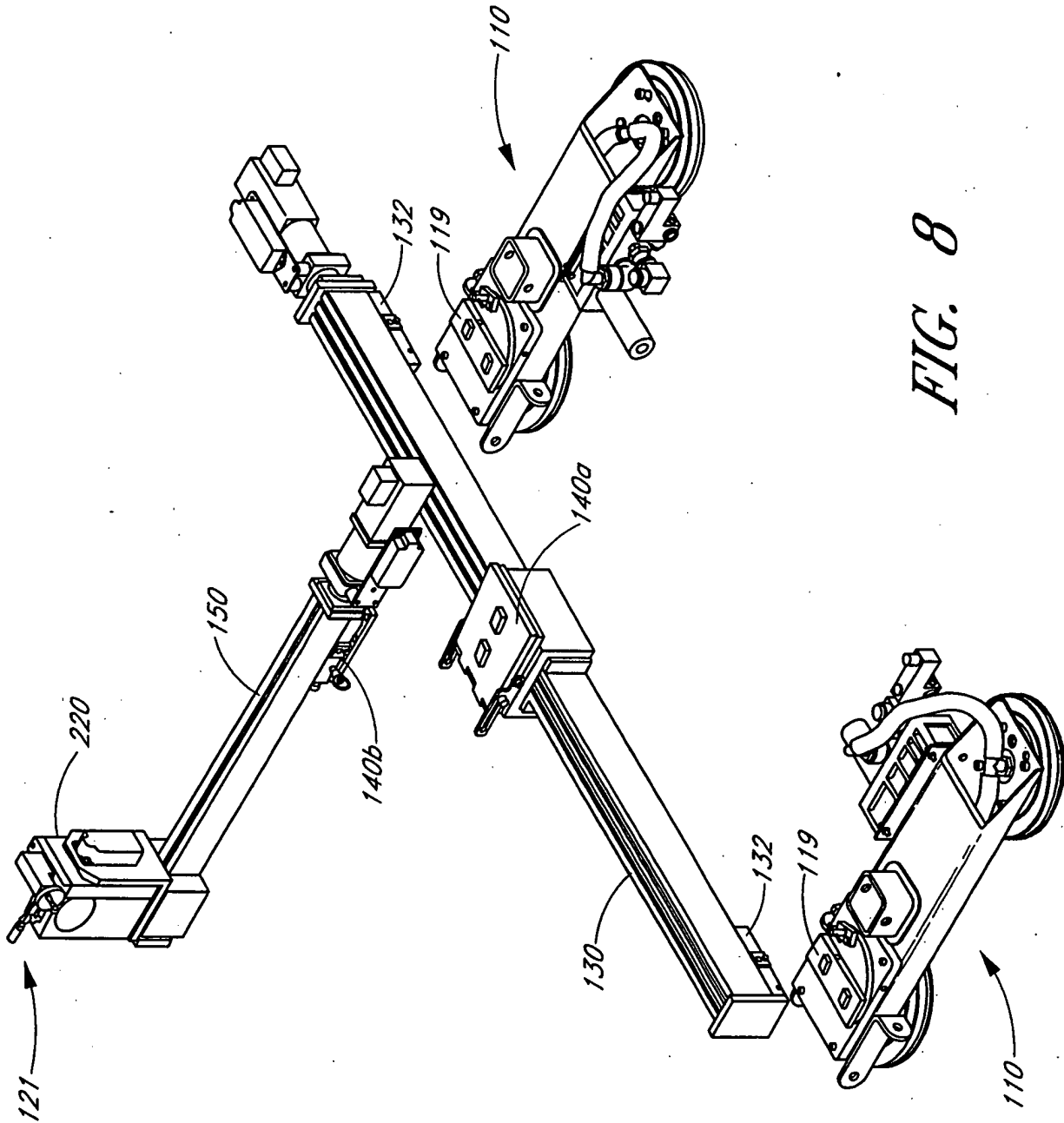


FIG. 8

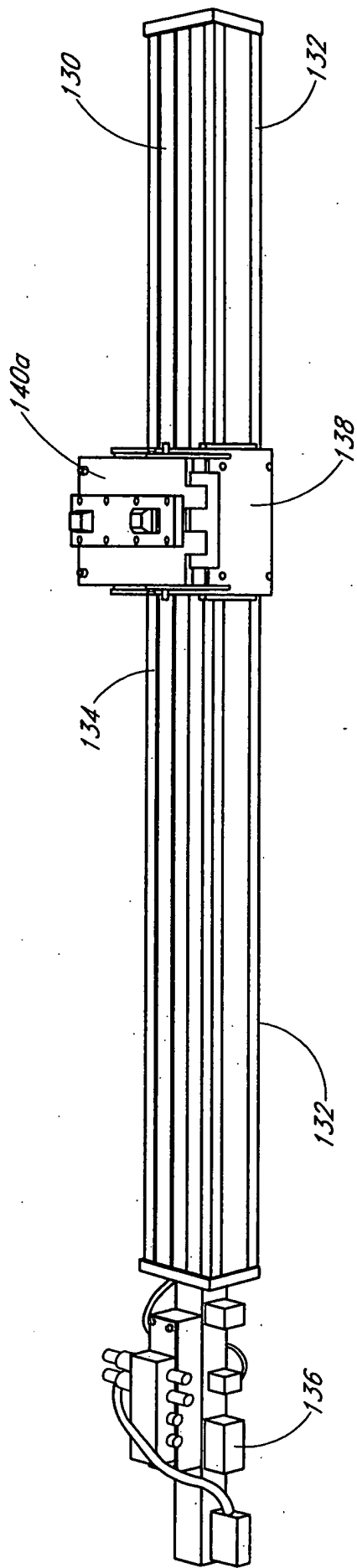
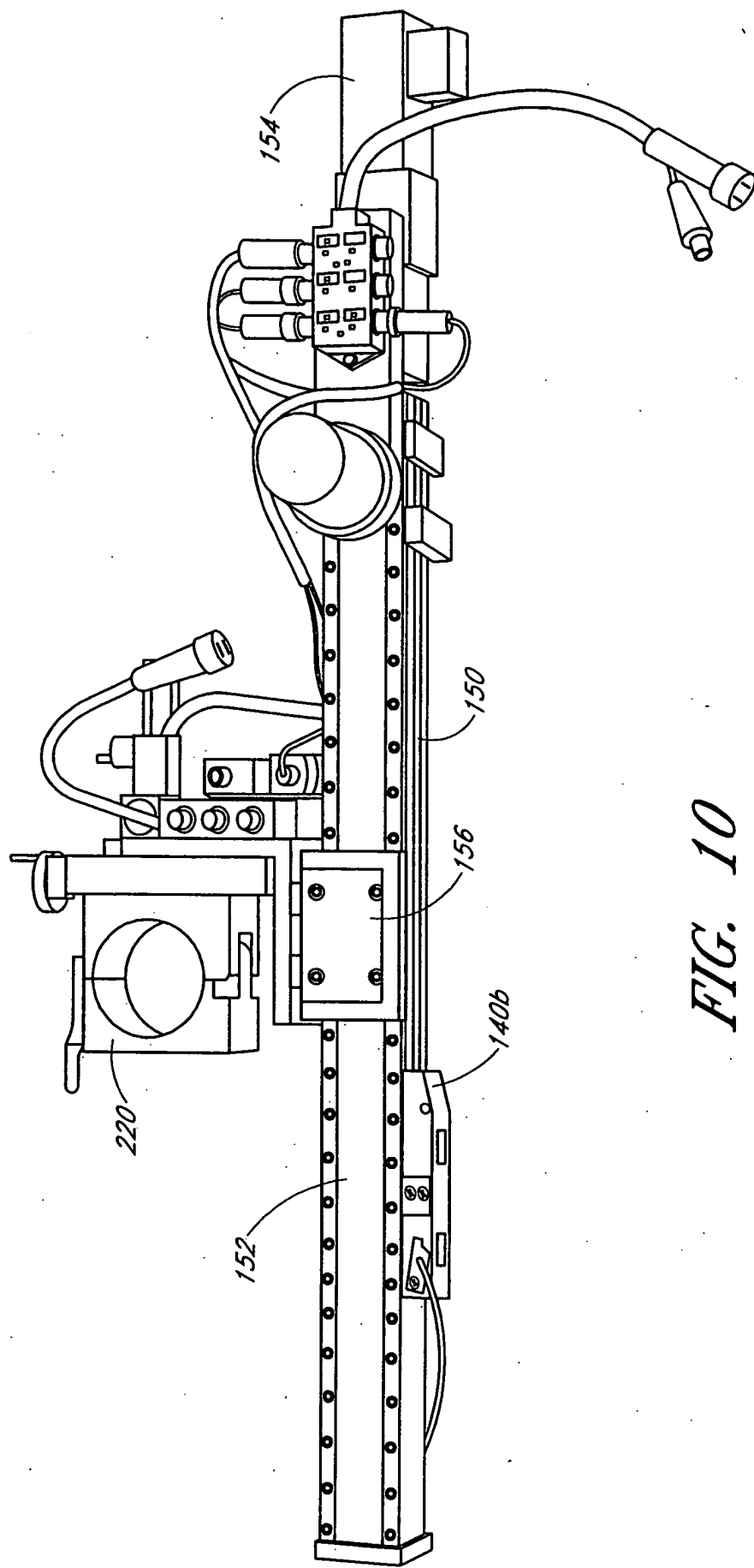
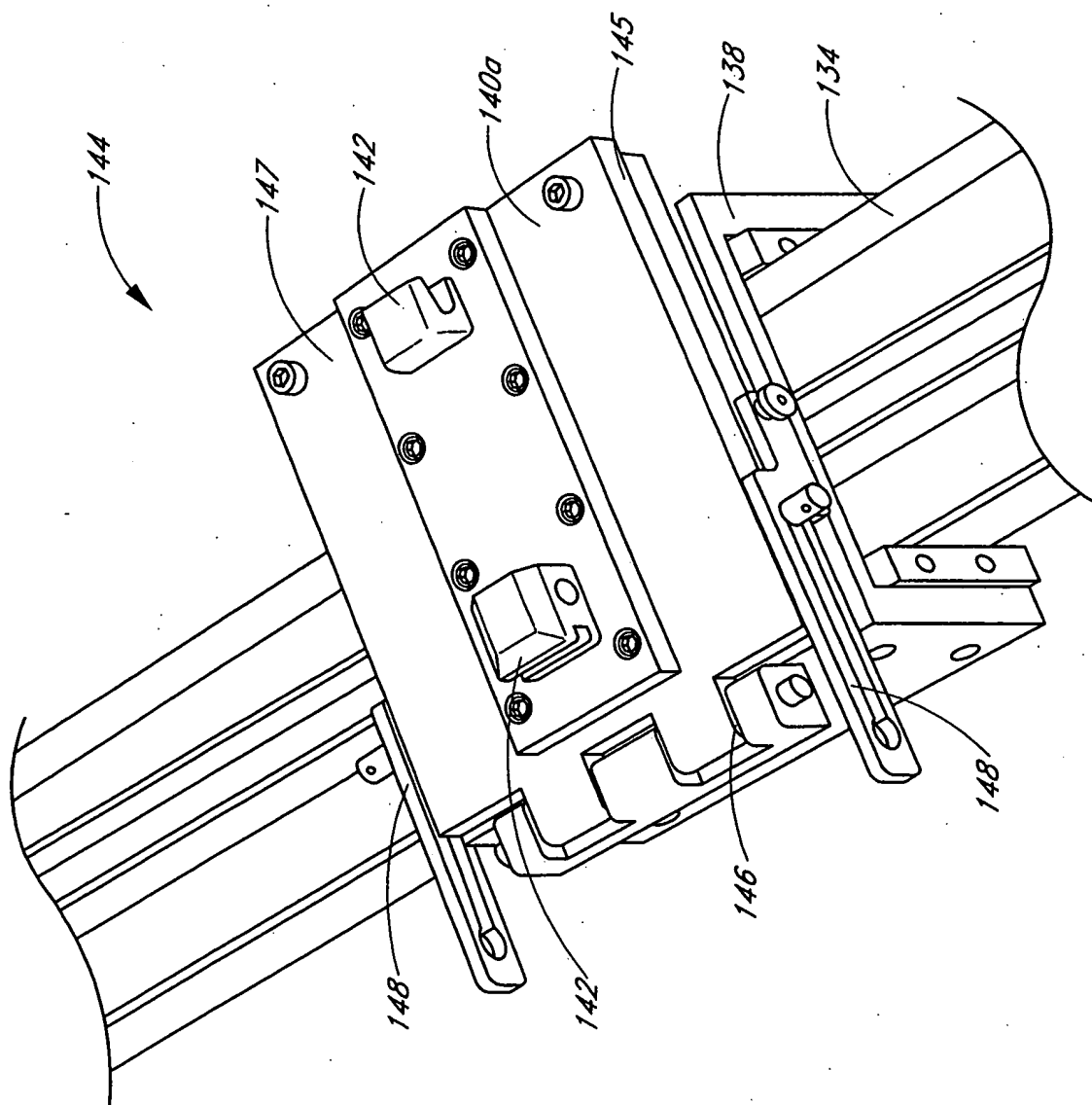


FIG. 9



**FIG. 10**

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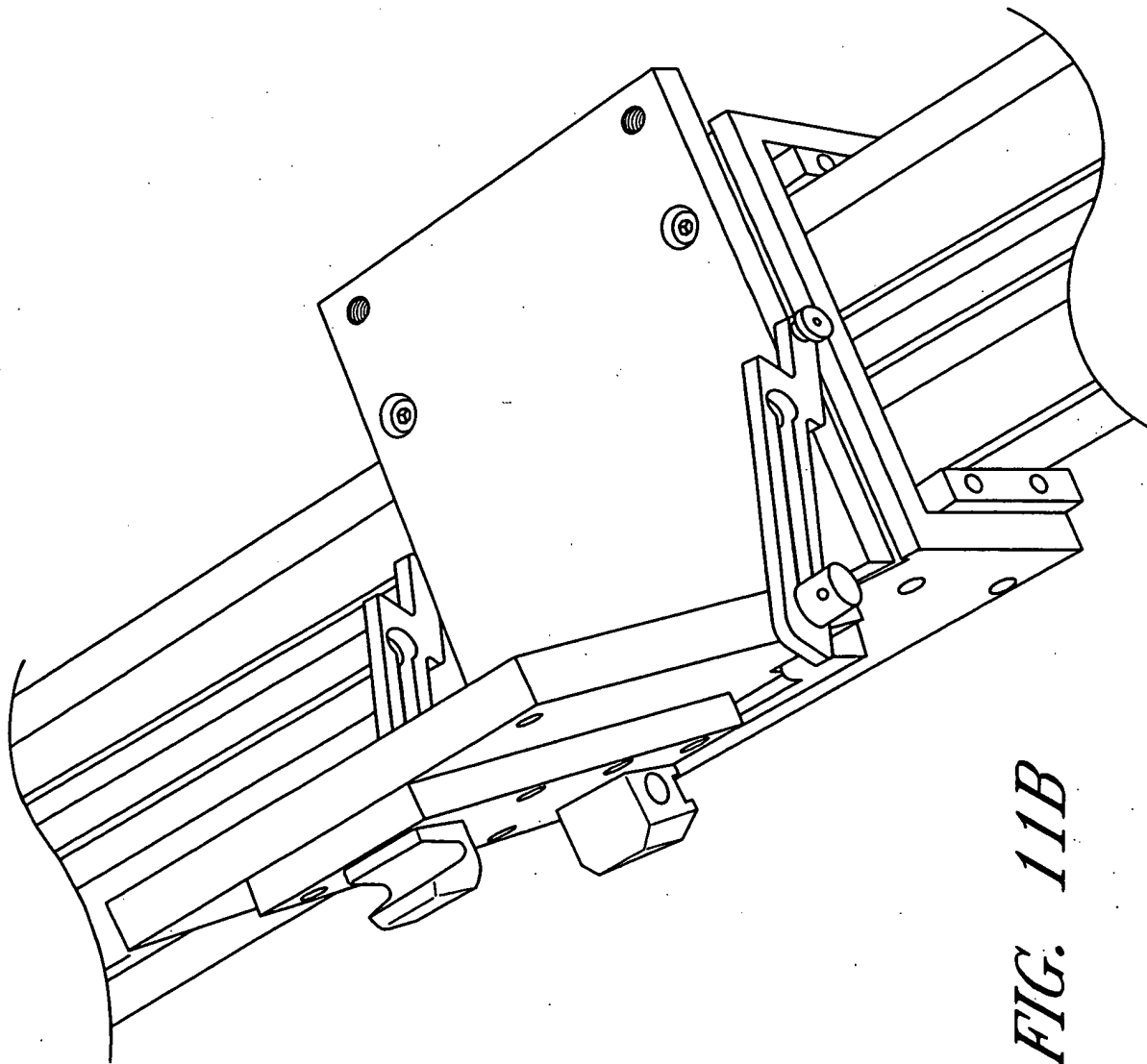
**FIG. 11A**

*METHOD AND APPARATUS FOR MATERIAL PROCESSING*

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*Filed.: March 18, 2004 Atty Docket: LOMASR.021CPI*

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*FIG. 11B*



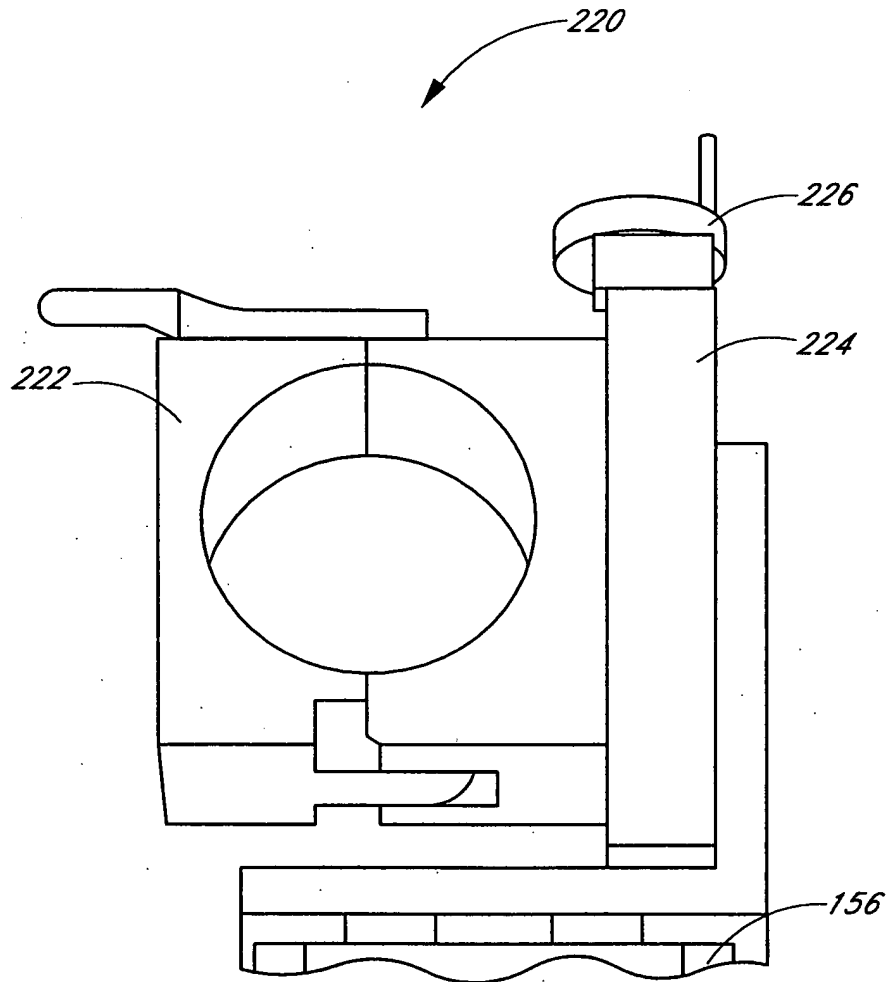


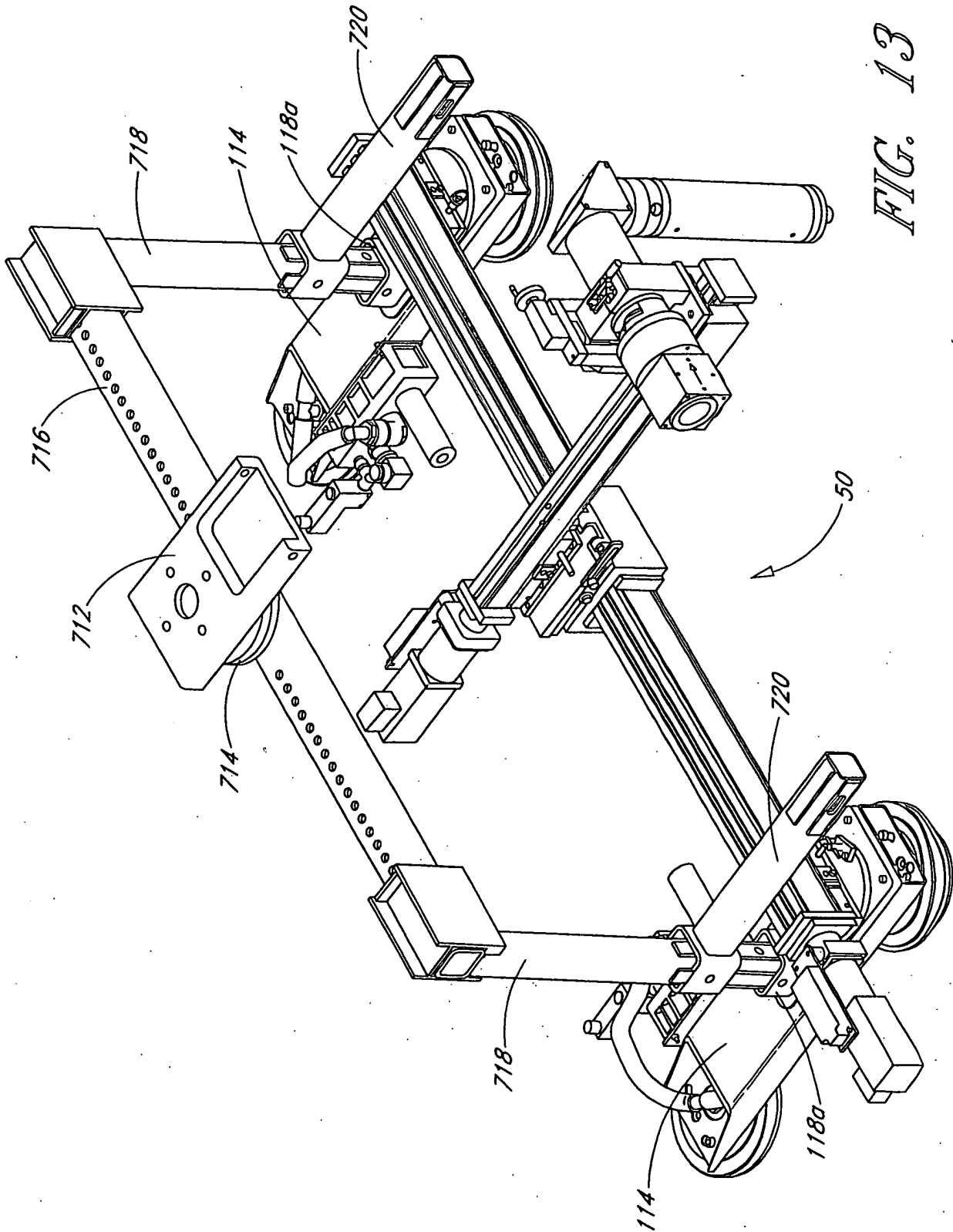
FIG. 12

METHOD AND APPARATUS FOR MATERIAL PROCESSING

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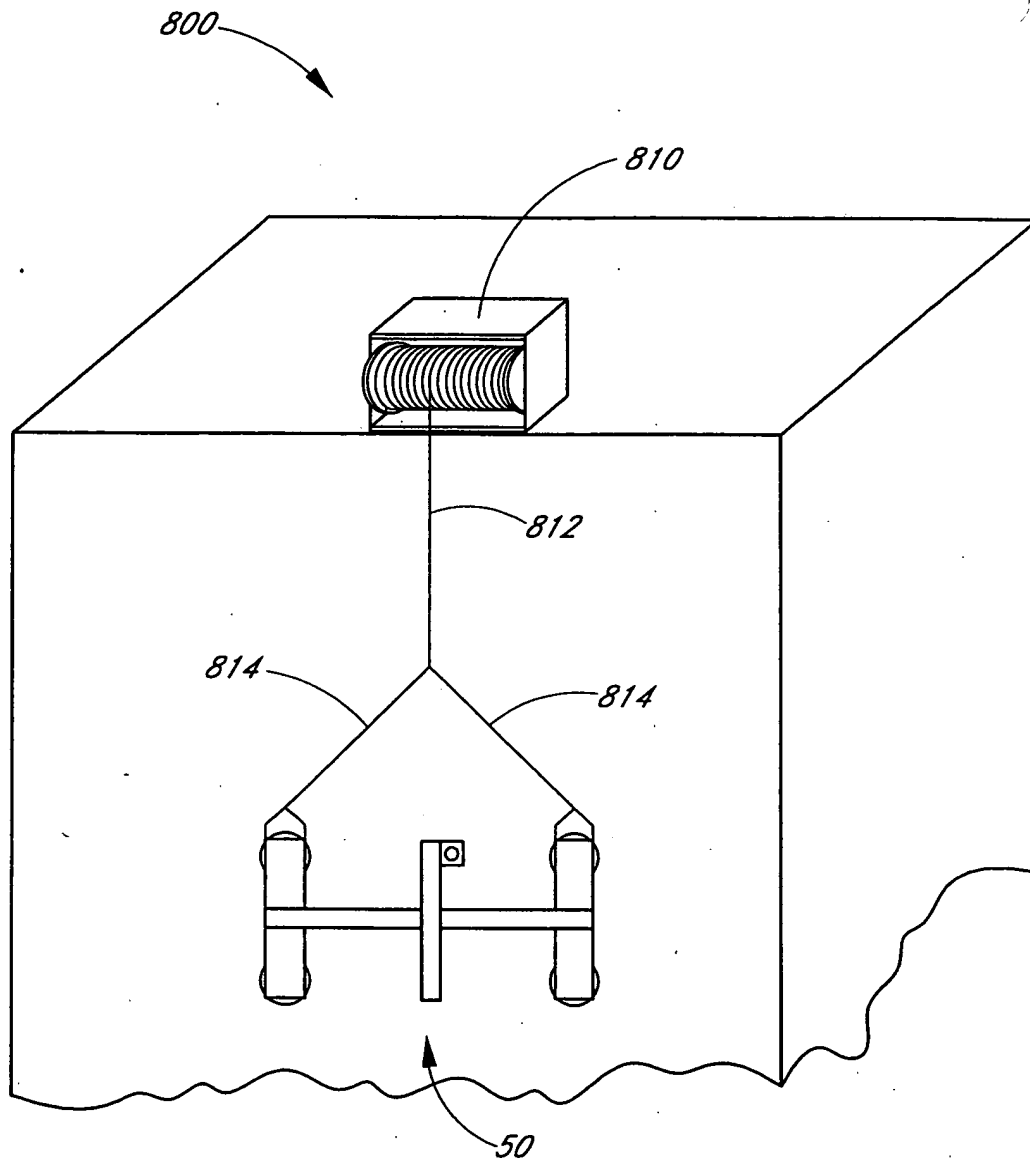
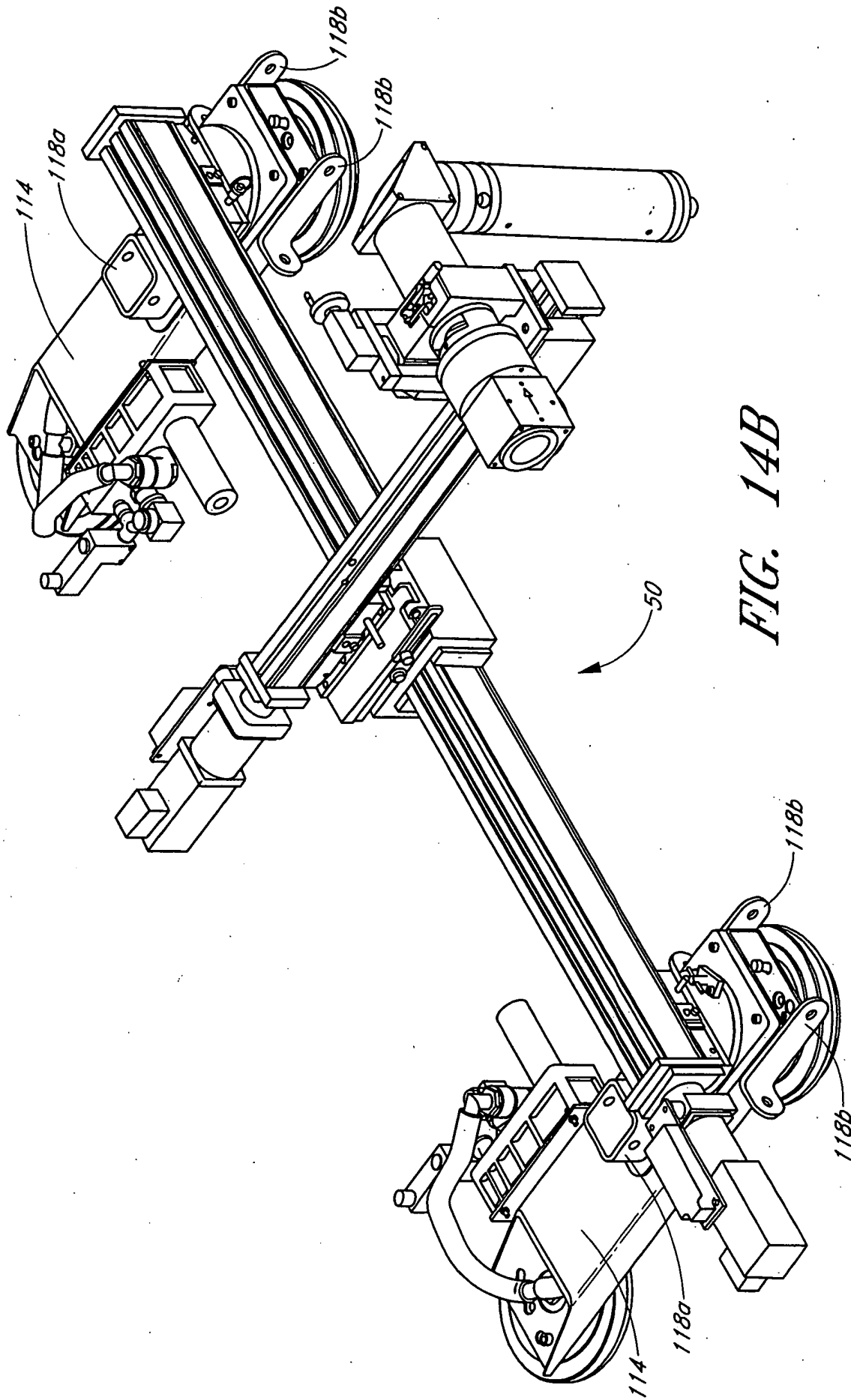


FIG. 14A



**FIG. 14B**

METHOD AND APPARATUS FOR MATERIAL PROCESSING

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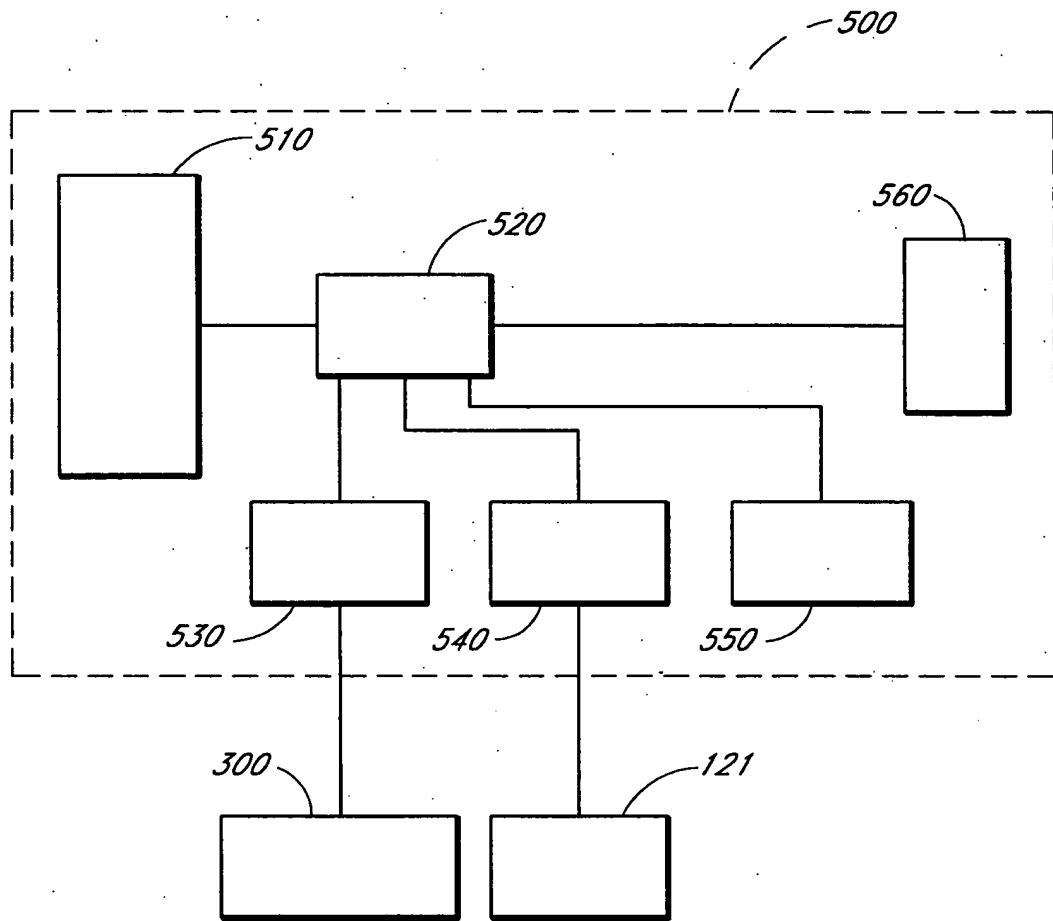


FIG. 15

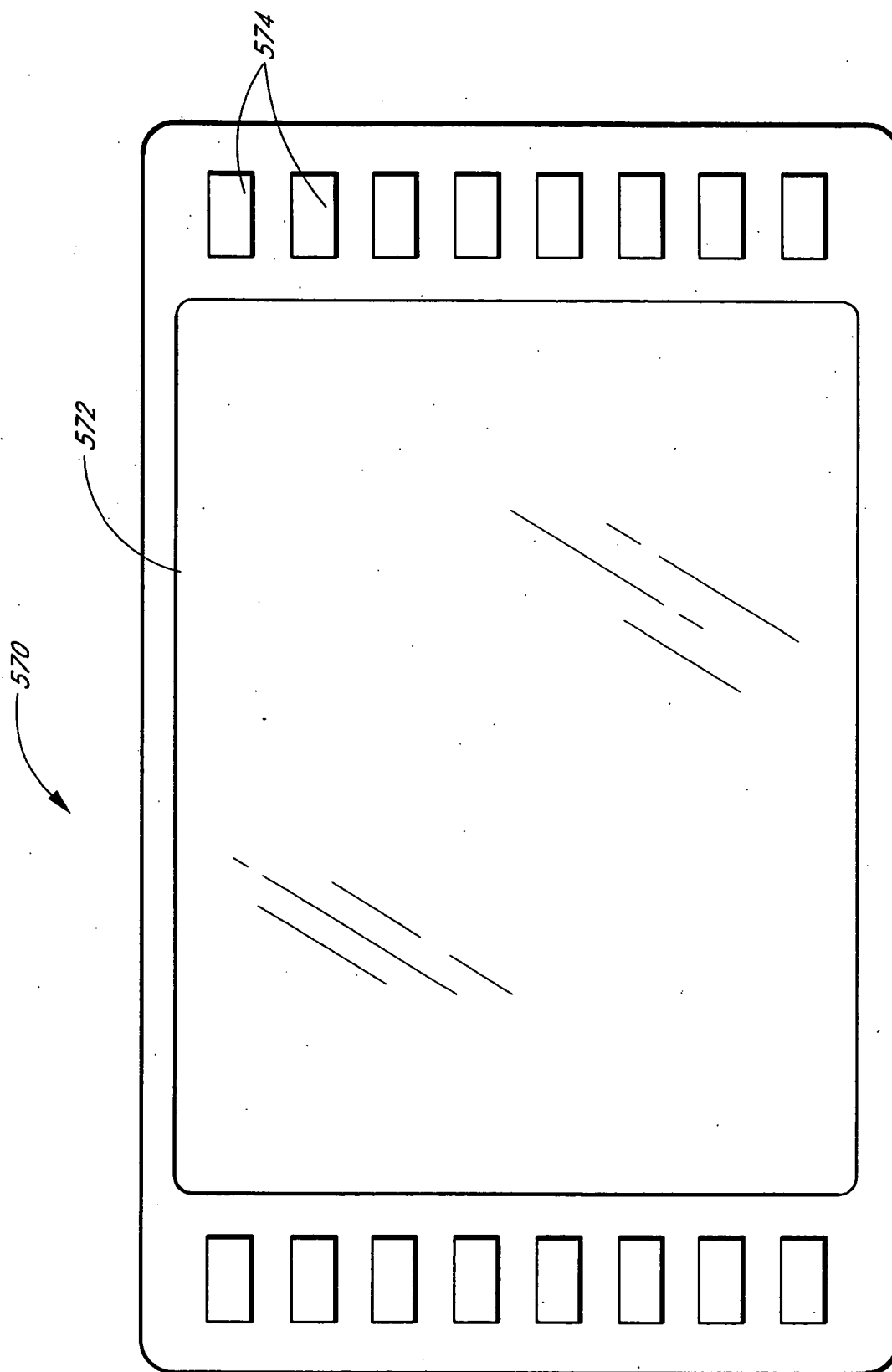


FIG. 16

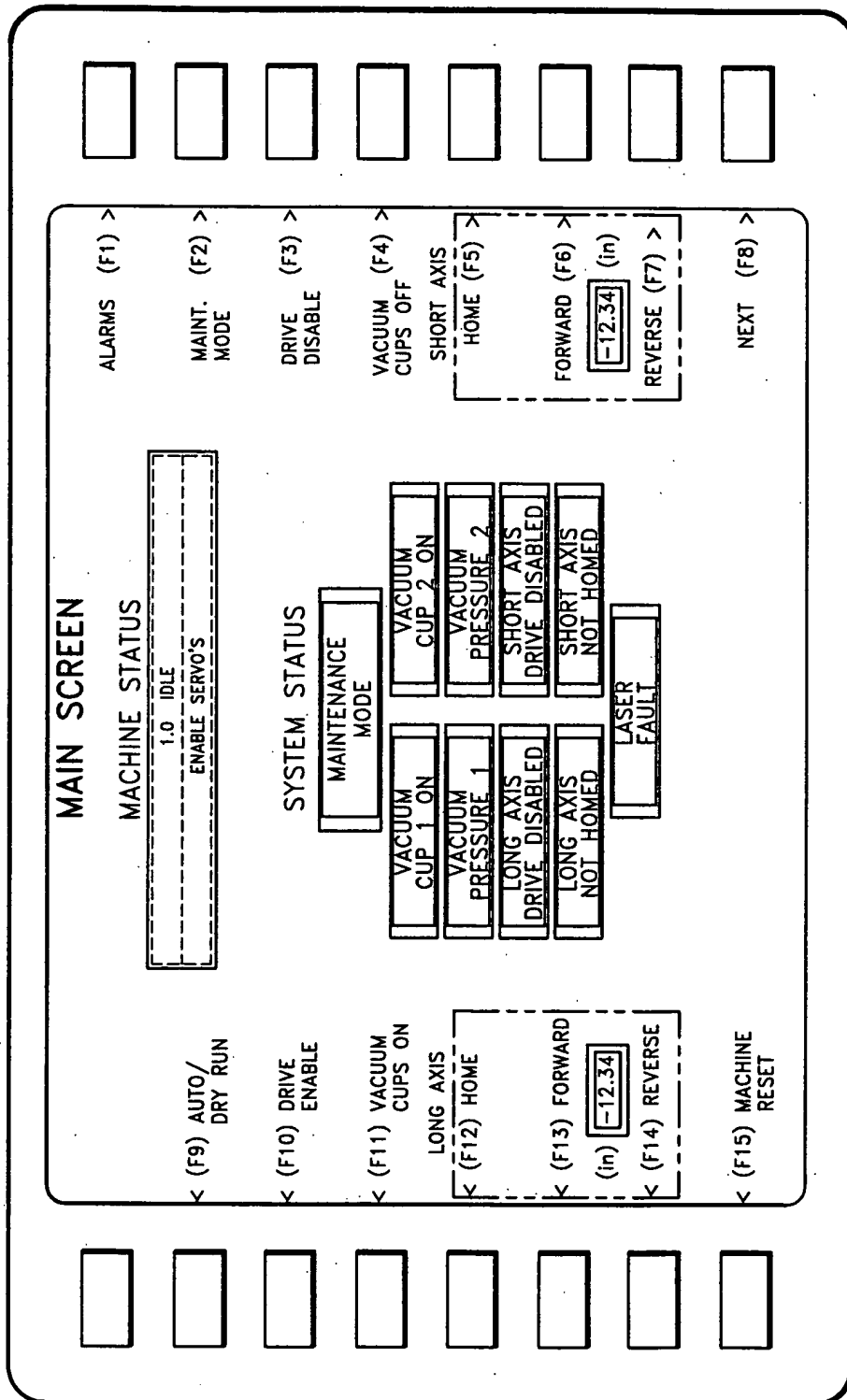


FIG. 17A

## SELECT OPERATION SCREEN

< (F9) AUTO/  
DRY RUN

MACHINE STATUS

1.0 IDLE  
ENABLE SERVO'S

< (F11) CIRCLE

LONG AXIS  
POSITION

-12.34 (in)

< (F12) PIERCE

SYSTEM STATUS

MAINTENANCE  
MODE

< (F13) STRAIGHT CUT

CIRCLE  
IDLE

< (F14) SURFACE  
KEYING

PIERCE  
IDLE

< (F15) MACHINE  
RESET

STRAIGHT CUT  
IDLE

SHORT AXIS  
POSITION

-12.34 (in)

SURFACE KEYING  
IDLE

NEXT (F8) >

FIG. 17B



## CIRCLE SETUP/OPERATION SCREEN

< (F9) AUTO/  
DRY RUN

MACHINE STATUS

1.0 IDLE

ENABLE SERVO'S

CIRCLE STATUS

2.0 CIRCLE SEQUENCE IDLE

PRESS CYCLE START TO BEGIN

< (F11) CYCLE  
START

SYSTEM STATUS

MAINTENANCE  
MODE

< (F15) MACHINE  
RESET

LONG AXIS  
POSITION

-12.34 (in)

SHORT AXIS  
POSITION

-12.34 (in)

CYCLE (F4) >  
STOP

CIRCLE PARAMETERS

REVOLUTIONS

STATUS 1234

SET POINT 1234

COUNT 123

DIAMETER (in)

STATUS -1.234

SET POINT -1.234

TIME (sec)

STATUS 1234

SET POINT 1234

SPEED (in/min)

STATUS -12.34

SET POINT -12.34

PROGRAM NUMBER

STATUS 12

SET POINT 12

NEXT (F8) >

FIG. 17C

**PIERCE SETUP/OPERATION SCREEN**

**MACHINE STATUS**

1.0 IDLE

ENABLE SERVO'S

**PIERCE STATUS**

3.0 PIERCE SEQUENCE IDLE

PRESS CYCLE START TO BEGIN

**SYSTEM STATUS**

MAINTENANCE MODE

**PIERCE PARAMETERS**

LONG AXIS POSITION

-12.34 (in)

SHORT AXIS POSITION

-12.34 (in)

**PIERCE PARAMETERS**

TIME (sec)

STATUS 1234

SET POINT 1234

PROGRAM NUMBER

STATUS 12

SET POINT 12

< (F9) AUTO/ DRY RUN

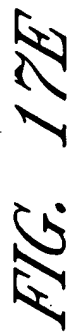
< (F11) CYCLE START

< (F15) MACHINE RESET

CYCLE (F4) >  
STOP

NEXT (F8) >

FIG. 17D



**SURFACE KEYING SETUP/OPERATION SCREEN**

**MACHINE STATUS**

1.0 IDLE  
ENABLE SERVO'S

**SURFACE KEYING STATUS**

5.0 KEYING SEQUENCE IDLE  
PRESS CYCLE START TO BEGIN

**SYSTEM STATUS**

MAINTENANCE  
MODE

**LONG AXIS POSITION**  
[-12.34] (in)

**SHORT AXIS POSITION**  
[-12.34] (in)

**LONG AXIS LENGTH (in)**  
STATUS [-12.34]  
SET POINT [-12.34]

**SHORT AXIS LENGTH (in)**  
STATUS [-12.34]  
SET POINT [-12.34]

**SPEED (in/min)**  
STATUS [-12.34]  
SET POINT [-12.34]

**OFFSET (in)**  
STATUS [-12.34]  
SET POINT [-12.34]

< (F9) AUTO/ DRY RUN

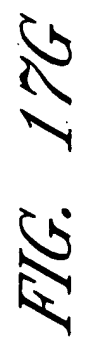
< (F11) CYCLE START

< (F15) MACHINE RESET

CYCLE (F4) >  
STOP

NEXT (F8) >

FIG. 17F



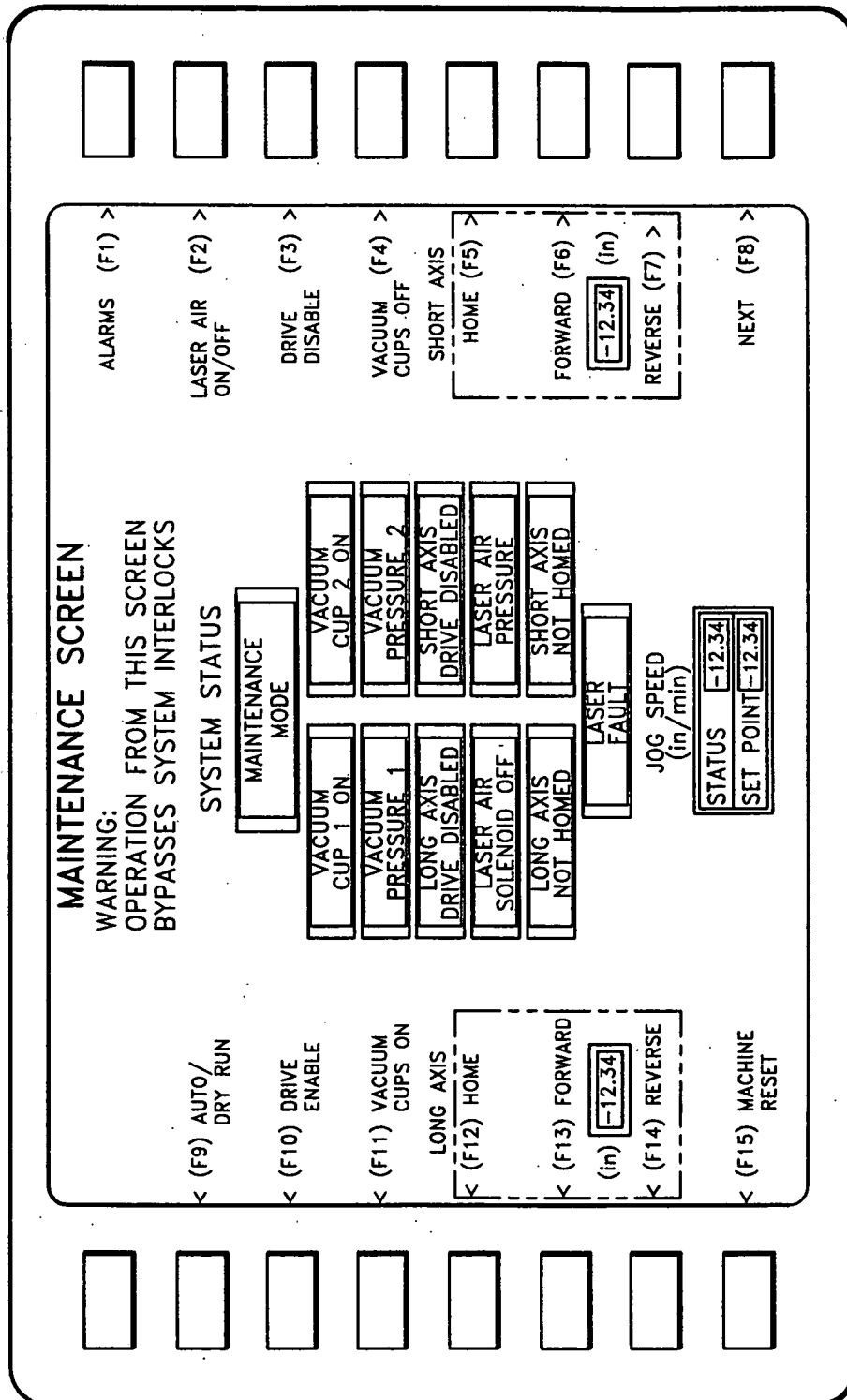


FIG. 17H

Figure 18A:

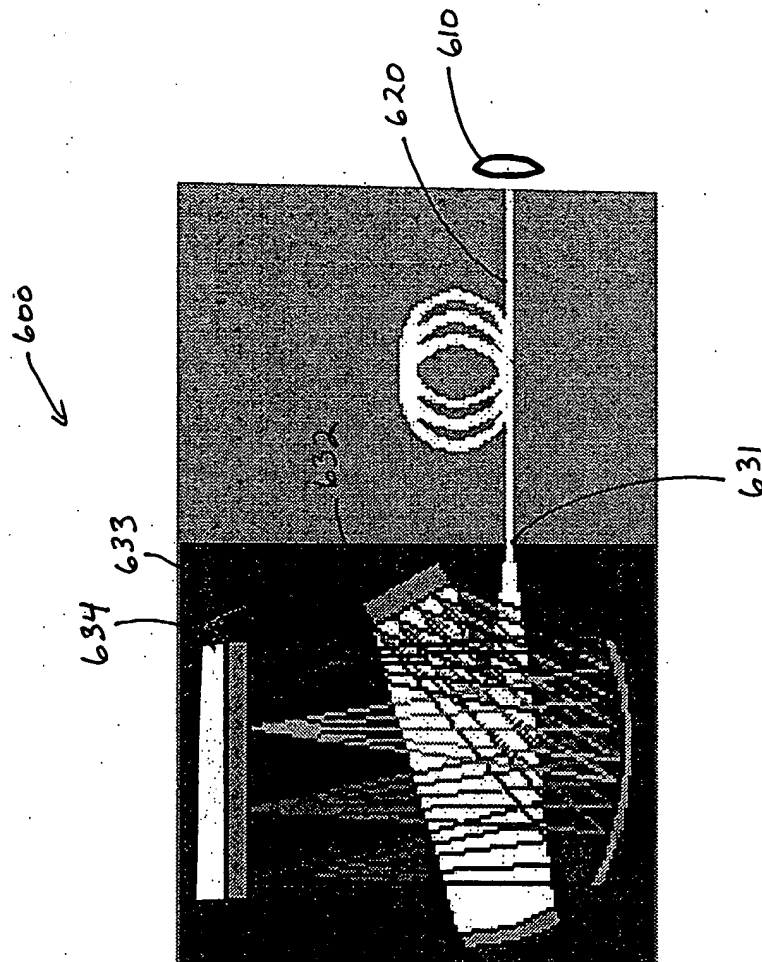
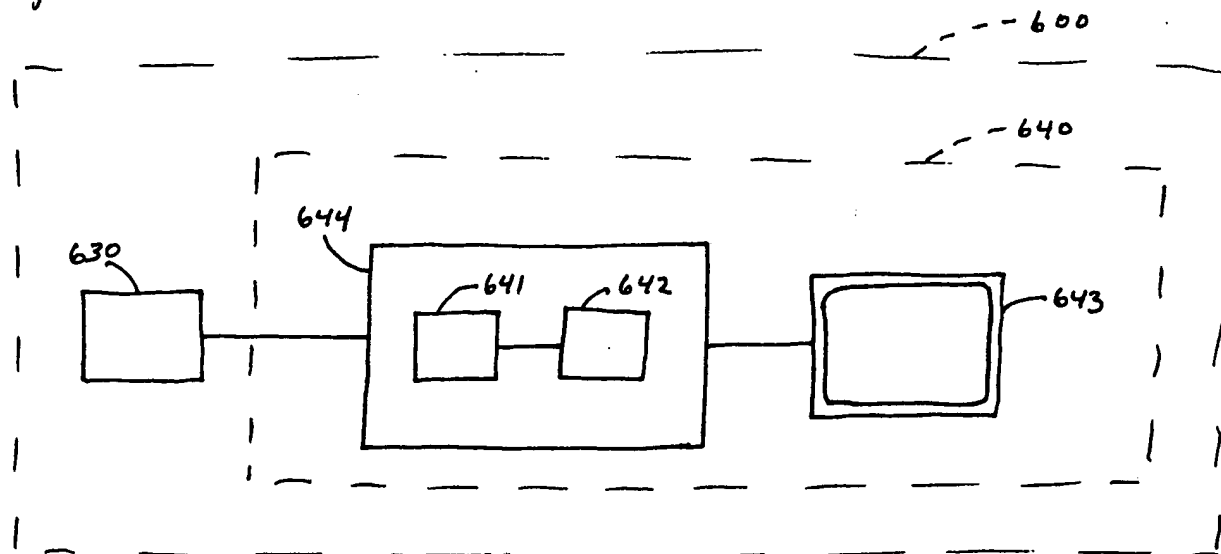


Figure 18B:





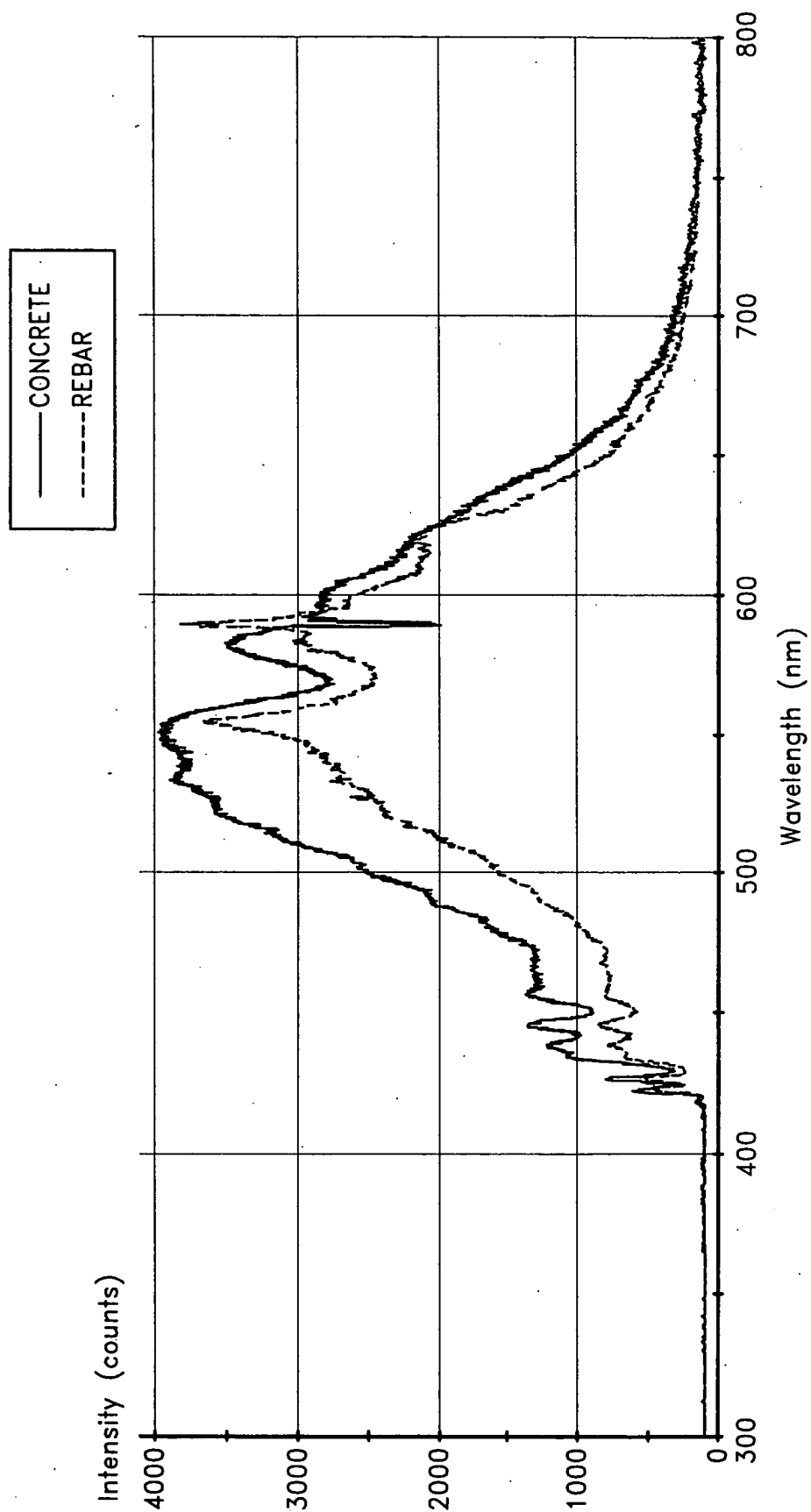


FIG. 19

Figure 20:

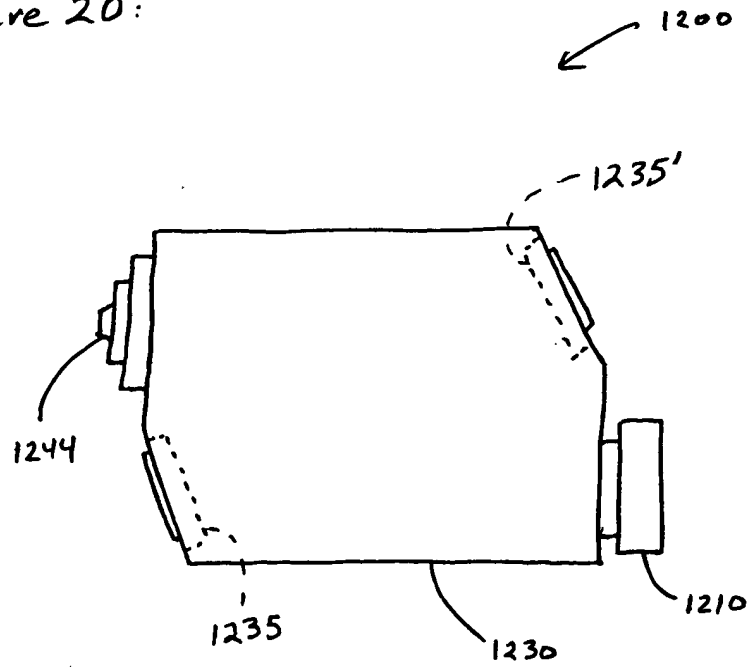


Figure 21A:

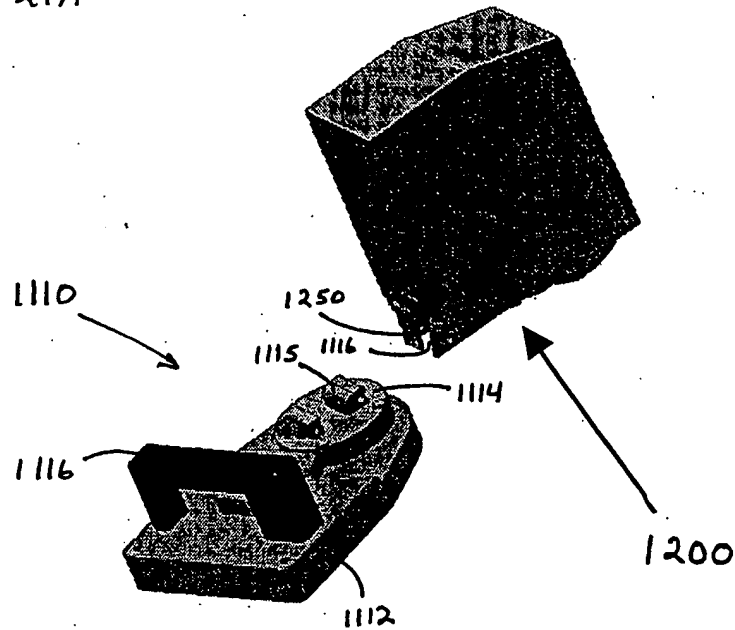


Figure 21B:

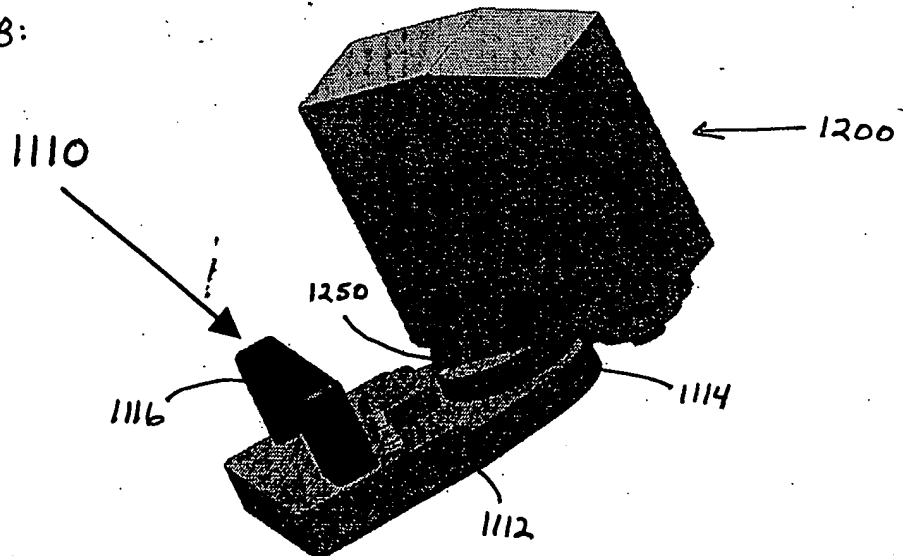
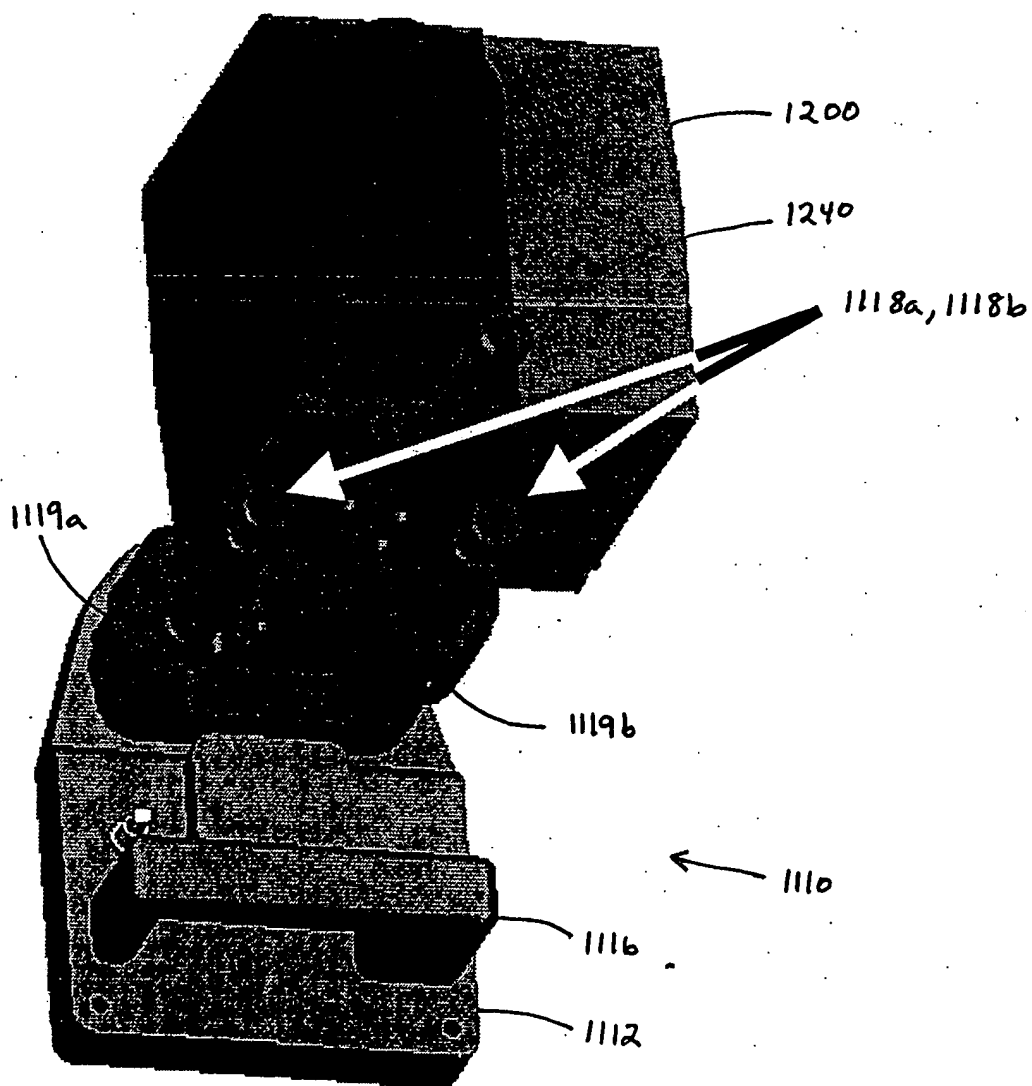


Figure 21C:



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Figure 210:

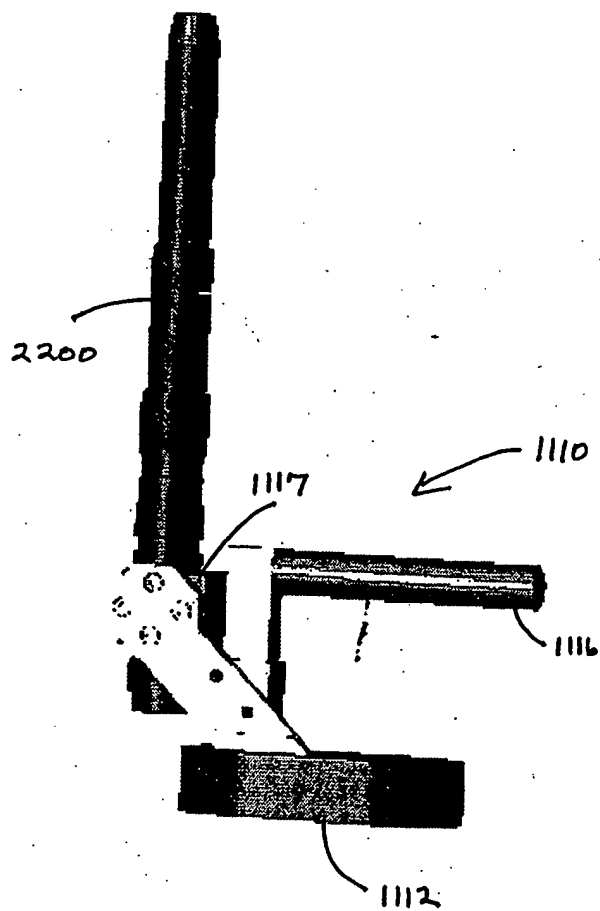


Figure 22:

